Exam.Code:0943
Sub. Code: 33880

2124

B.E. (Mechanical Engineering)
Seventh Semester
MEC-701: Refrigeration and Air Conditioning

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Section. Use of Refrigeration and Air conditioning tables and charts in bounded form only is allowed.

x-x-x

1. (i) Name two refrigerants each having high and low values of GWP and ODP. (2)
   (ii) Write the advantages of using cooling towers in refrigeration industry? (2)
   (iii) What is wet bulb depression. Define enthalpy deviation? (2)
   (iv) Define bypass factor, and briefly explain it role in EER. (2)
   (v) Write a brief note on alignment circle. (2)

Section - A

2. Write the advantages of air cycle for aircraft refrigeration. Classify various aircraft refrigeration systems. (10)

3. Write short note on refrigerants, explaining desirable properties of refrigerants. (10)

4. Explain the working of lithium bromide vapour absorption system in detail with the help of neat and clean diagram. (10)

Section - B

5. The following data relate to air-conditioning space: (i) Outside condition = $38^oC\ DBT, 50\%$ (ii) Room condition = $24^oC\ DBT, 50\%$ (iii) Sensible heat load = $24\ kW$ (iv) Latent heat load = $6\ kW$ (v) Bypass factor = 0.16.
   20% fresh air, 80% recirculated air contribute on mass basis.
   Find the following: (a) supply air flow rate (b) outside air sensible heat (c) outside air latent heat (d) grand total heat (e) effective room sensible heat factor (10)

6. Explain the process of throttling for real gas in detail. A simple saturation ammonia compression system has a high pressure of $1.35MN/m^2$ and low pressure of $0.19MN/m^2$. Find per $400000kJ/h$ of refrigeration capacity, the power consumption of the compressor and COP of the cycle. (10)

7. Explain the working of three fluid system in detail, also draw its neat and clean detailed diagram.(10)

x-x-x